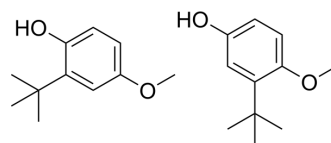


## Butylhydroxyanisole

<b>Cat. No.:</b>	HY-B1066		
<b>CAS No.:</b>	25013-16-5		
<b>Molecular Formula:</b>	C <sub>22</sub> H <sub>32</sub> O <sub>4</sub>		
<b>Molecular Weight:</b>	180.24		
<b>Target:</b>	Reactive Oxygen Species; Ferroptosis		
<b>Pathway:</b>	Immunology/Inflammation; Metabolic Enzyme/Protease; NF-κB; Apoptosis		
<b>Storage:</b>	Powder	-20°C	3 years
		4°C	2 years
	In solvent	-80°C	2 years
		-20°C	1 year



### SOLVENT & SOLUBILITY

#### In Vitro

DMSO : ≥ 100 mg/mL (554.82 mM)  
 H<sub>2</sub>O : 1 mg/mL (5.55 mM; ultrasonic and warming and heat to 60°C)  
 \* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions	Solvent Concentration	Mass		
		1 mg	5 mg	10 mg
	1 mM	5.5482 mL	27.7408 mL	55.4816 mL
	5 mM	1.1096 mL	5.5482 mL	11.0963 mL
	10 mM	0.5548 mL	2.7741 mL	5.5482 mL

Please refer to the solubility information to select the appropriate solvent.

#### In Vivo

1. Add each solvent one by one: PBS  
 Solubility: 100 mg/mL (554.82 mM); Clear solution; Need ultrasonic

### BIOLOGICAL ACTIVITY

#### Description

Butylhydroxyanisole (Butylated hydroxyanisole) is an antioxidant used as a food additive preservative. Butylhydroxyanisole mediates liver toxicity, retardation in reproductive organ development and learning, and sleep deficit. Butylhydroxyanisole exerts neurotoxic effects and leads to disruption of the brain and nerve development<sup>[1][2][3]</sup>. Butylhydroxyanisole is a ferroptosis inducer<sup>[4]</sup>.

#### In Vitro

Butylhydroxyanisole exerts neurotoxic effects by promoting cytosolic calcium accumulation and endoplasmic reticulum stress in astrocytes<sup>[1]</sup>.  
 Butylhydroxyanisole (25-100 μM; 48 hours) inhibits growth and induces death in human astrocytes<sup>[1]</sup>.  
 Butylhydroxyanisole (100 μM; 48 hours) decreases the expression of cell-cycle-related proteins and increased the expression of the cell cycle inhibitory protein<sup>[1]</sup>.

Butylhydroxyanisole (100  $\mu$ M; 48 hours) mediates apoptotic signals in NHA-SV40LT Cells<sup>[1]</sup>.  
 Butylhydroxyanisole also increases the cytosolic calcium level and the expression of endoplasmic reticulum stress proteins<sup>[1]</sup>.  
 Butylhydroxyanisole induces testicular dysfunction in mouse testis cells by dysregulating calcium homeostasis and stimulating endoplasmic reticulum stress<sup>[2]</sup>.  
 MCE has not independently confirmed the accuracy of these methods. They are for reference only.

#### Cell Proliferation Assay<sup>[1]</sup>

Cell Line:	NHA-SV40LT cells
Concentration:	0 $\mu$ M, 25 $\mu$ M, 50 $\mu$ M, 75 $\mu$ M, 100 $\mu$ M
Incubation Time:	48 hours
Result:	Exerted antiproliferative effects.

#### Cell Cycle Analysis<sup>[1]</sup>

Cell Line:	NHA-SV40LT cells
Concentration:	100 $\mu$ M
Incubation Time:	48 hours
Result:	Downregulated the typical cell proliferative signaling pathways, phosphoinositide 3-kinase/protein kinase B and extracellular signal-regulated kinase 1/2.

#### Apoptosis Analysis<sup>[1]</sup>

Cell Line:	NHA-SV40LT cells
Concentration:	100 $\mu$ M
Incubation Time:	48 hours
Result:	Increased the levels of pro-apoptotic proteins, such as BAX, cytochrome c, cleaved caspase 3, and cleaved caspase 9, and decreased the level of anti-apoptotic protein BCL-XL.

#### Western Blot Analysis<sup>[1]</sup>

Cell Line:	NHA-SV40LT cells
Concentration:	100 $\mu$ M
Incubation Time:	48 hours
Result:	Increased the expression of pro-apoptotic proteins and decreased the levels of anti-apoptotic proteins. Asterisks show significant effects.

#### In Vivo

Butylhydroxyanisole (200 mg/kg; i.g.; daily; for three days) induces distinct expression patterns of Nrf2 and detoxification enzymes in the liver and small intestine of C57BL/6 mice<sup>[3]</sup>.  
 MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	Five-week-old C57BL/6 mice (WT and Nrf2 <sup>-/-</sup> ) <sup>[3]</sup>
Dosage:	200 mg/kg

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Administration:	Oral gavage, daily, for three days
Result:	Increased Nqo1 staining in hepatocytes, predominately in the pericentral region.

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## CUSTOMER VALIDATION

- Autophagy. 2021 Apr;17(4):872-887.
- Cell Rep. 2020 Nov 3;33(5):108340.
- Free Radic Biol Med. 2021 Feb 1;163:141-152.
- Life Sci. 2021, 119268.
- Sci Rep. 2017 Aug 29;7(1):9873.

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## REFERENCES

- [1]. Sunwoo Park, et al. Butylated Hydroxyanisole Exerts Neurotoxic Effects by Promoting Cytosolic Calcium Accumulation and Endoplasmic Reticulum Stress in Astrocytes. *J Agric Food Chem*. 2019 Aug 28;67(34):9618-9629.
- [2]. Jiyeon Ham, et al. Butylated Hydroxyanisole Exerts Neurotoxic Effects by Promoting Cytosolic Calcium Accumulation and Endoplasmic Reticulum Stress in Astrocytes. *Sci Total Environ*. 2020 Feb 1;702:134775.
- [3]. Lin Luo, et al. Butylated hydroxyanisole induces distinct expression patterns of Nrf2 and detoxification enzymes in the liver and small intestine of C57BL/6 mice. *Toxicol Appl Pharmacol*. 2015 Nov 1;288(3):339-48.
- [4]. Jennifer Yinuo Cao, et al. Mechanisms of ferroptosis. *Cell Mol Life Sci*. 2016 Jun;73(11-12):2195-209.
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**Caution: Product has not been fully validated for medical applications. For research use only.**

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